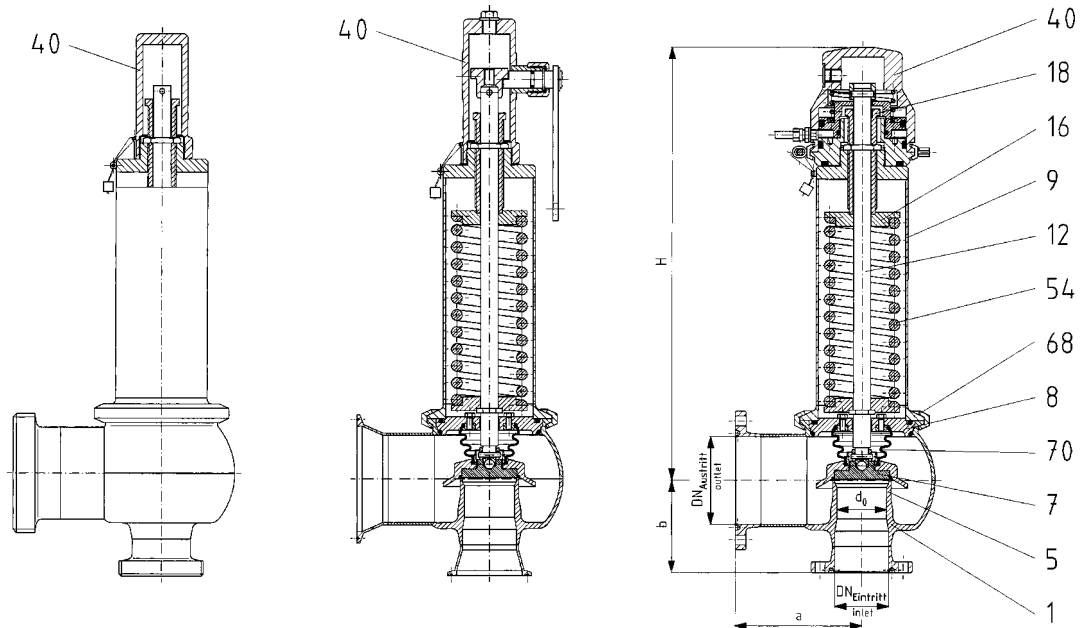


Clean-Service-Feder-Sicherheitsventil für große Leistung

Clean Service Safety Valve spring loaded for large capacity

für Dämpfe, Gase und Flüssigkeiten
for steam, gases and liquids

**Type
488**



Zusatzrüstungen

Näherungsinitiator

Anschlüsse

siehe Seite 12/01 und 12/02

Accessories

Lift indicator

Connections

refer to page 12/01 and 12/02

Type 488
mit gasdichter Kappe H2
Eintritt: SC-Gewindestutzen – GO
Austritt: SC-Gewindestutzen – GO
with gastight cap H2
Inlet: aseptic-thread – GO
Outlet: aseptic-thread – GO

Type 488
mit Anlüftung H4, gasdicht,
Teller anlüftbar
Eintritt: Zoll-Clamp – CO
Austritt: Zoll-Clamp – CO
with lifting device H4, gastight,
disc liftable
Inlet: inch-clamp – CO
Outlet: inch-clamp – CO

Type 488
mit pneumatischer Anlüftung H8, gasdicht,
Teller anlüftbar
Eintritt: Varivent Nutflansch – TN
Austritt: Varivent Nutflansch – TN
with lifting device H8, gastight,
disc liftable
Inlet: Varivent flange, groove – TN
Outlet: Varivent flange, groove – TN

Zulassungen / Approvals

| EG-Bauteilprüf. / EC-type examination no. 07 202 0111 Z00080/25 | Dämpfe/Gase D/G Steam/Gases S/G | Flüssigkeiten F Liquids L |
|---|---|-----------------------------------|
| TÜV (AD-A2, TRD 421, VdTÜV SV 100) Listennr. / Approval number Ausflussziffer / Coefficient of discharge α_d Öffnungscharakteristik / Opening characteristic | 1047 0,7 Vollhub / Full lift | 1047 0,45 Normal / Standard |
| ASME/NB (ASME Sec. VIII Div. 1) Nr. / No. Ausflussziffer / Coefficient of discharge K | M37011, M37022 Anspruchdruck: 1,38 - 2,06 bar g (20,0 - 29,99 psig): 0,691 2,07 - 16,00 bar g (30,0 - 240,00 psig): 0,721 | M37033 0,472 |
| Weitere / Others siehe Seite / refer to page 2/40-41 | Ministry of Labour Canada, SVTI | |

| Gehäusewerkstoff Body material | DN | | Temperatureinsatzgrenze °C Temperature range °F | | | | Druckeinsatzbereich bar pressure range psig | | | | | |
|-----------------------------------|--|-------------------------------|--|-----------|-------------|-----------|--|-----------|---------|---------|---------|--------|
| | DIN EN | | ASME | | DIN EN | | ASME | | | | | |
| | Werkstoffbezeichnung Material Designation | Werkstoff-Nr. Material No. | von from | bis to | von from | bis to | von from | bis to | | | | |
| X 2 CrNiMo 17-12-2 | 1.4404 | SA 316L | 25 | 100 | 1" | 4" | -45/-49 | 150/302 | -45/-49 | 150/302 | 0,2/3,0 | 16/232 |

Artikelnummern / Article Numbers

| Nennweite, Ventilgröße nominal diameter, valve size | DN | – | 25 | 40 | 50 | 65 | 80 | 100 |
|--|-------|---|------|------|------|------|------|------|
| Artikelnummer article numbers | 4884. | – | 802* | 804* | 805* | 806* | 807* | 808* |

* Bitte hier gewünschte Ziffer für Kappe oder Anlüftung anfügen:
2 = Kappe H2 4 = Anlüftung H4 8 = Anlüftung H8

Änderungen behalten wir uns vor.

* Please add number for the required cap or lifting device:
2 = Cap H2 4 = lifting device H4 8 = lifting device H8

Modifications reserved.

Abmessungen, Druckbereiche, Gewichte / Dimensions, Pressure Ranges, Weights

| Nennweite, Ventilgröße | | Nominal Diameter, Valve size | | DN | – | 25 | 40 | 50 | 65 | 80 | 100 |
|---|---------------------------|------------------------------|-----------------------------|----------------|-----------------|-----------|---------------|-----------|-----------|----------|----------|
| Nennweite, Eintritt | | Nominal diameter, inlet | | DN | – | 25 | 40 | 50 | 65 | 80 | 100 |
| Nennweite, Austritt | | Nominal diameter, outlet | | DN | – | 40 | 65 | 80 | 100 | 125 | 150 |
| Ventilgröße | Zoll-Clamp (Tri-Clamp®) | Valve size | inch-clamp (Tri-Clamp®) | – | – | 1 1/2 x 2 | 2 x 3 | 2 1/2 x 4 | – | – | – |
| | Flansche nach ANSI B 16.5 | | flanges acc. to ANSI B 16.5 | NPS | – | 1 x 1 1/2 | 1 1/2 x 2 1/2 | 2 x 3 | 2 1/2 x 4 | 3 x 5 | 4 x 6 |
| Druckstufe, Eintritt | | Pressure rating, inlet | | PN | – | 16 | | | | | |
| Druckstufe, Austritt | | Pressure rating, outlet | | PN | – | 16 | | | | | |
| Max. Ansprechdruck | | Max. Set pressure | | p | bar | 16 | | | | | |
| | | | | p | psig | 232 | | | | | |
| Engster Strömungsquerschnitt | | Flow area | | A ₀ | mm ² | 416 | 1075 | 1662 | 2827 | 4301 | 6648 |
| | | | | A ₀ | sq. in. | 0,645 | 1,666 | 2,576 | 4,382 | 6,667 | 10,3 |
| Engster Strömungsdurchmesser | | Flow diameter | | d ₀ | mm | 23 | 37 | 46 | 60 | 74 | 92 |
| | | | | d ₀ | in. | 0,906 | 1,457 | 1,812 | 2,363 | 2,915 | 3,624 |
| Eintrittsschenkellänge/inlet centre to face dimension | | | | | | | | | | | |
| Schlüssel/code | nach/acc. to | Anschlussarmatur | connection | | | | | | | | |
| GO | DIN 11851 | SC-Gewindestutzen | aseptic-thread | b | mm | 82 | 103 | 112 | 127 | 147 | – |
| | | | | b | in. | 3 1/4 | 4 | 4 2/5 | 5 | 5 25/32 | – |
| CO | ISO 2852 | Zoll-Clamp (Tri-Clamp®) | inch-clamp (Tri-Clamp®) | b | mm | 81 | 98 | 105 | – | – | – |
| | | | | b | in. | 3 5/32 | 3 27/32 | 4 1/8 | – | – | – |
| TN | Tuchenhagen | Varivent-Nutflansch | Varivent flange, groove | b | mm | 78 | 95 | 102 | 112 | 127 | 146 |
| | | | | b | in. | 3 1/16 | 3 3/4 | 4 | 4 3/8 | 5 | 5 3/4 |
| FD | DIN 2633 | Flansch PN 16 | flange PN 16 | b | mm | 91 | 112 | 122 | 132 | 152 | 173 |
| | | | | b | in. | 3 4/7 | 4 3/8 | 4 13/16 | 5 3/16 | 5 31/32 | 6 25/32 |
| Austrittsschenkellänge/outlet centre to face dimension | | | | | | | | | | | |
| Schlüssel/code | nach/acc. to | Anschlussarmatur | connection | | | | | | | | |
| GO | DIN 11851 | SC-Gewindestutzen | aseptic-thread | a | mm | 122 | 164 | 169 | 178 | 195 | – |
| | | | | a | in. | 4 13/16 | 6 15/32 | 6 21/32 | 7 | 7 11/16 | – |
| CO | ISO 2852 | Zoll-Clamp (Tri-Clamp®) | inch-clamp (Tri-Clamp®) | a | mm | 117 | 152 | 152 | – | – | – |
| | | | | a | in. | 4 19/32 | 5 31/32 | 5 31/32 | – | – | – |
| TN | Tuchenhagen | Varivent-Nutflansch | Varivent flange, groove | a | mm | 114 | 149 | 149 | 149 | 174 | 181,5 |
| | | | | a | in. | 4 1/2 | 5 7/8 | 5 7/8 | 5 7/8 | 6 27/32 | 7 5/32 |
| FD | DIN 2633 | Flansch PN 16 | flange PN 16 | a | mm | 131 | 169 | 174 | 176 | 178 | 183 |
| | | | | a | in. | 5 5/32 | 6 27/32 | 6 27/32 | 6 15/16 | 7 | 7 7/32 |
| Bauhöhe | H2 | height | H2 | H | mm | 264 | 398 | 406 | 415 | 496 | 514 |
| | H2 | | H2 | H | in. | 10 13/32 | 15 21/32 | 15 31/32 | 16 11/32 | 19 17/32 | 20 1/4 |
| | H4 | | H4 | H | mm | 305 | 426 | 432 | 443 | 524 | 542 |
| | H4 | | H4 | H | in. | 12 | 16 25/32 | 17 | 17 7/16 | 20 5/8 | 21 11/32 |
| | H8 | | H8 | H | mm | 274 | 399 | 407 | 416 | 497 | 515 |
| | H8 | | H8 | H | in. | 10 25/32 | 15 23/32 | 16 1/32 | 16 3/8 | 19 9/16 | 20 9/32 |
| Gewicht | weight | | – | kg | 8 | 14 | 16 | 24 | 39 | 39 | |

Hinweise: Die Montage oder Demontage des Tellers der Type 488 erfordert ein Montage-Werkzeug.

Remarks: The assembly or disassembly of the disc type 488 requires an assembly tool.

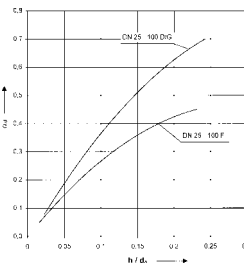
Werkstoffe / Materials

| Pos. Item | Bauteile | Parts | 4884 | |
|-----------|---|---|------------------------------------|-------|
| | | | korrosionsfest/corrosion resistant | ASME |
| | | | Werkstoff Nr./material no. | |
| 1 | Gehäuse | body | 1.4404 | 316 L |
| 5 | Sitz | seat | | |
| 7 | Teller mit Weichdichtung | disc with soft seal | 1.4404 | 316 L |
| 8 | Führungsscheibe mit Buchse | guide with bush | 1.4404 | 316 L |
| 9 | Federhaube | bonnet | EPDM – FDA | |
| 12 | Spindel | spindle | 1.4404 | 316 L |
| 16 | Federteller | spring plate | | |
| 18 | Druckschraube mit Buchse | adjusting screw with bush | 1.4404 | 316 L |
| 54 | Feder | spring | 1.4310 | 302 |
| 40 | Kappe H2 Anlüftung H4 Pneumat. Anlüftung H8 | cap H2 lifting device H4 pneum. lifting device H8 | 1.4404 | 316 L |
| 68 | Klapppring | clamp | 1.4401 | 316 |
| 70 | Faltenbalg | bellows | EPDM – FDA | |

Zuerkannte Ausflussziffer α_d / Coefficient of Discharge α_d

Diagramm 1

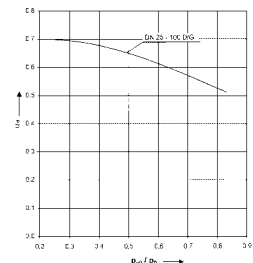
$$\alpha_d = f(h/d_0)$$



h = Hub (mm)
d₀ = engster Strömungsdurchmesser (mm)
p_{ao} = Gegendruck, bar (abs.)
p_o = Ansprechdruck, bar (abs.)

Diagramm 2

$$\alpha_d = f(p_{ao}/p_o)$$



h = Lift (mm)
d₀ = Flow diameter (mm)
p_{ao} = Back pressure bar (abs.)
p_o = Set pressure bar (abs.)

| Leistungstabelle | | | | Discharge Capacities | | | |
|--|---|--|--|--|--|--|-------------------------|
| Berechnung entsprechend DIN 3320, AD-Merkblatt A2, TRD 421 | | | | Calculation of mass flow according to DIN 3320, AD-Merkblatt A2, TRD 421 | | | |
| p | Ansprechüberdruck | | | Set pressure | | | bar/bar g ¹⁾ |
| I | Sattdampf, Abblasen gegen Atmosphärenüberdruck | | | Sat. steam valve discharging to atmospheric pressure | | | kg/h |
| II | Luft bei 0°C, Abblasen gegen Atmosphärenüberdruck | | | Air at 32°F valve discharging to atmospheric pressure | | | m ³ /h |
| III | Wasser bei 20°C | | | Water at 68°F | | | 10 ³ kg/h |

| DN | 25 | | | 40 | | | 50 | | | 65 | | | 80 | | | 100 | | |
|---------------------|------|------|------|------|------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| d _o (mm) | 23 | | | 37 | | | 46 | | | 60 | | | 74 | | | 92 | | |
| p | I | II | III | I | II | III | I | II | III | I | II | III | I | II | III | I | II | III |
| 0,2 | 149 | 172 | 5,21 | 385 | 445 | 13,5 | 595 | 688 | 20,9 | 1013 | 1171 | 35,5 | 1541 | 1781 | 54,0 | 2381 | 2753 | 83,4 |
| 0,5 | 230 | 269 | 7,37 | 595 | 696 | 19,1 | 919 | 1076 | 29,5 | 1564 | 1831 | 50,2 | 2379 | 2785 | 76,3 | 3677 | 4305 | 118 |
| 1,0 | 330 | 393 | 10,0 | 855 | 1018 | 25,8 | 1321 | 1573 | 39,9 | 2248 | 2676 | 67,9 | 3419 | 4071 | 103 | 5285 | 6292 | 160 |
| 2,0 | 524 | 631 | 14,1 | 1357 | 1634 | 36,5 | 2097 | 2525 | 56,5 | 3567 | 4296 | 96,1 | 5427 | 6535 | 146 | 8388 | 10101 | 226 |
| 3,0 | 701 | 853 | 17,3 | 1814 | 2209 | 44,8 | 2803 | 3414 | 69,2 | 4769 | 5808 | 118 | 7254 | 8835 | 179 | 11212 | 13655 | 277 |
| 4,0 | 870 | 1071 | 20,0 | 2251 | 2772 | 51,7 | 3479 | 4284 | 79,9 | 5919 | 7289 | 136 | 9003 | 11088 | 207 | 13916 | 17138 | 319 |
| 5,0 | 1041 | 1289 | 22,3 | 2693 | 3335 | 57,8 | 4163 | 5155 | 89,3 | 7083 | 8771 | 152 | 10774 | 13341 | 231 | 16652 | 20621 | 357 |
| 6,0 | 1217 | 1506 | 24,5 | 3148 | 3899 | 63,3 | 4866 | 6026 | 97,8 | 8279 | 10252 | 166 | 12593 | 15594 | 253 | 19465 | 24103 | 391 |
| 7,0 | 1385 | 1724 | 26,4 | 3584 | 4462 | 68,4 | 5539 | 6897 | 106 | 9423 | 11733 | 180 | 14334 | 17847 | 273 | 22155 | 27586 | 423 |
| 8,0 | 1551 | 1942 | 28,2 | 4014 | 5025 | 73,1 | 6204 | 7767 | 113 | 10555 | 13214 | 192 | 16056 | 20101 | 292 | 24817 | 31069 | 452 |
| 9,0 | 1725 | 2159 | 30,0 | 4464 | 5588 | 77,5 | 6900 | 8638 | 120 | 11739 | 14696 | 204 | 17856 | 22354 | 310 | 27599 | 34551 | 479 |
| 10,0 | 1889 | 2377 | 31,6 | 4887 | 6152 | 81,7 | 7554 | 9509 | 126 | 12852 | 16177 | 215 | 19549 | 24607 | 327 | 30216 | 38034 | 505 |
| 12,0 | 2234 | 2812 | 34,6 | 5782 | 7278 | 89,5 | 8938 | 11250 | 138 | 15206 | 19140 | 235 | 23129 | 29114 | 358 | 35750 | 44999 | 553 |
| 14,0 | 2566 | 3248 | 37,4 | 6642 | 8405 | 96,7 | 10265 | 12991 | 149 | 17465 | 22102 | 254 | 26566 | 33620 | 387 | 41062 | 51965 | 598 |
| 16,0 | 2895 | 3683 | 39,9 | 7491 | 9532 | 103 | 11579 | 14733 | 160 | 19700 | 25065 | 272 | 29966 | 38126 | 413 | 46317 | 58930 | 639 |

Leistungstabelle / Discharge capacities

| | | | | | | | |
|---|--|--|--|--|--|--|--------------------|
| Berechnung entsprechend ASME Boiler and Pressure Vessel Code, Section VIII, Div. 1 mit 10 % Drucksteigerung und um 10 % reduzierter Ausflussziffer. Leistungen unterhalb 30 psig sind mit 3 psi Drucksteigerung berechnet. | | | | Calculation of mass flow according to ASME Boiler and Pressure Vessel Code, Sec. VIII, Div 1 at 10 % overpressure and 90 % rating. Capacities below 30 psig are calculated including 3 psi overpressure. | | | |
| p | Ansprechüberdruck | | | Set pressure | | | bar |
| I | Sattdampf, Abblasen gegen Atmosphärenüberdruck | | | Sat. steam valve discharging to atmospheric pressure | | | kg/h |
| II | Luft bei 15,56 °C, Abblasen gegen Atmosphärenüberdruck | | | Air at 60 °F, valve discharging to atmospheric pressure | | | m ³ /h |
| III | Wasser bei 21,1 °C | | | Water at 70 °F | | | 10 ³ kg |

| DN | 25 | | | 40 | | | 50 | | | 65 | | | 80 | | | 100 | | |
|---------------------|------|------|-----|------|------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| d _o (mm) | 23 | | | 37 | | | 46 | | | 60 | | | 74 | | | 92 | | |
| p | I | II | III | I | II | III | I | II | III | I | II | III | I | II | III | I | II | III |
| ¹⁾ 0,2 | 157 | 198 | 6 | 407 | 514 | 17 | 631 | 796 | 25 | 1070 | 1350 | 43 | 1630 | 2060 | 66 | 2520 | 3190 | 102 |
| ¹⁾ 0,5 | 219 | 277 | 8 | 565 | 716 | 22 | 874 | 1110 | 33 | 1490 | 1880 | 57 | 2260 | 2860 | 86 | 3500 | 4420 | 133 |
| 1 | 323 | 410 | 11 | 836 | 1060 | 28 | 1290 | 1640 | 44 | 2200 | 2780 | 75 | 3350 | 4240 | 113 | 5190 | 6540 | 175 |
| 2 | 506 | 640 | 15 | 1310 | 1650 | 38 | 2020 | 2570 | 59 | 3440 | 4360 | 101 | 5240 | 6630 | 153 | 8120 | 10200 | 237 |
| 3 | 682 | 857 | 18 | 1760 | 2210 | 47 | 2720 | 3430 | 73 | 4610 | 5830 | 123 | 7060 | 8880 | 188 | 10900 | 13700 | 290 |
| 4 | 852 | 1080 | 21 | 2200 | 2790 | 54 | 3410 | 4310 | 84 | 5790 | 7340 | 143 | 8830 | 11200 | 217 | 13600 | 17200 | 335 |
| 5 | 1020 | 1300 | 23 | 2650 | 3350 | 60 | 4100 | 5190 | 94 | 6960 | 8840 | 159 | 10600 | 13400 | 242 | 16400 | 20800 | 374 |
| 6 | 1200 | 1520 | 26 | 3100 | 3930 | 66 | 4800 | 6070 | 103 | 8150 | 10300 | 174 | 12400 | 15700 | 266 | 19200 | 24300 | 411 |
| 7 | 1370 | 1730 | 28 | 3550 | 4490 | 72 | 5470 | 6940 | 111 | 9330 | 11800 | 188 | 14200 | 18000 | 286 | 21900 | 27800 | 444 |
| 8 | 1540 | 1960 | 30 | 4170 | 5070 | 77 | 6440 | 7830 | 119 | 11000 | 13300 | 202 | 16700 | 20200 | 306 | 25800 | 31300 | 473 |
| 9 | 1710 | 2180 | 32 | 4630 | 5630 | 82 | 7150 | 8690 | 126 | 12200 | 14800 | 214 | 18500 | 22400 | 325 | 28600 | 34700 | 502 |
| 10 | 1880 | 2390 | 34 | 5090 | 6190 | 86 | 7860 | 9550 | 133 | 13400 | 16200 | 226 | 20400 | 24600 | 342 | 31500 | 38200 | 529 |
| 12 | 2210 | 2830 | 37 | 6000 | 7320 | 94 | 9270 | 11300 | 146 | 15800 | 19200 | 247 | 24000 | 29100 | 376 | 37100 | 45100 | 579 |
| 14 | 2550 | 3270 | 40 | 6910 | 8450 | 102 | 10700 | 13000 | 157 | 18200 | 22200 | 267 | 27700 | 33600 | 405 | 42800 | 52200 | 625 |
| 16 | 2890 | 3710 | 43 | 7830 | 9590 | 109 | 12000 | 14800 | 169 | 20600 | 25200 | 285 | 31400 | 38100 | 433 | 48500 | 59200 | 668 |

¹⁾ Der Ansprechdruck ist kleiner als das zul. Minimum p_{min} = 15 psig des ASME-Codes, Sec. VIII, Div. 1!
Set pressure is lower than the minimum limit p_{min} = 15 psig of ASME-Code, Sec. VIII, Div. 1!